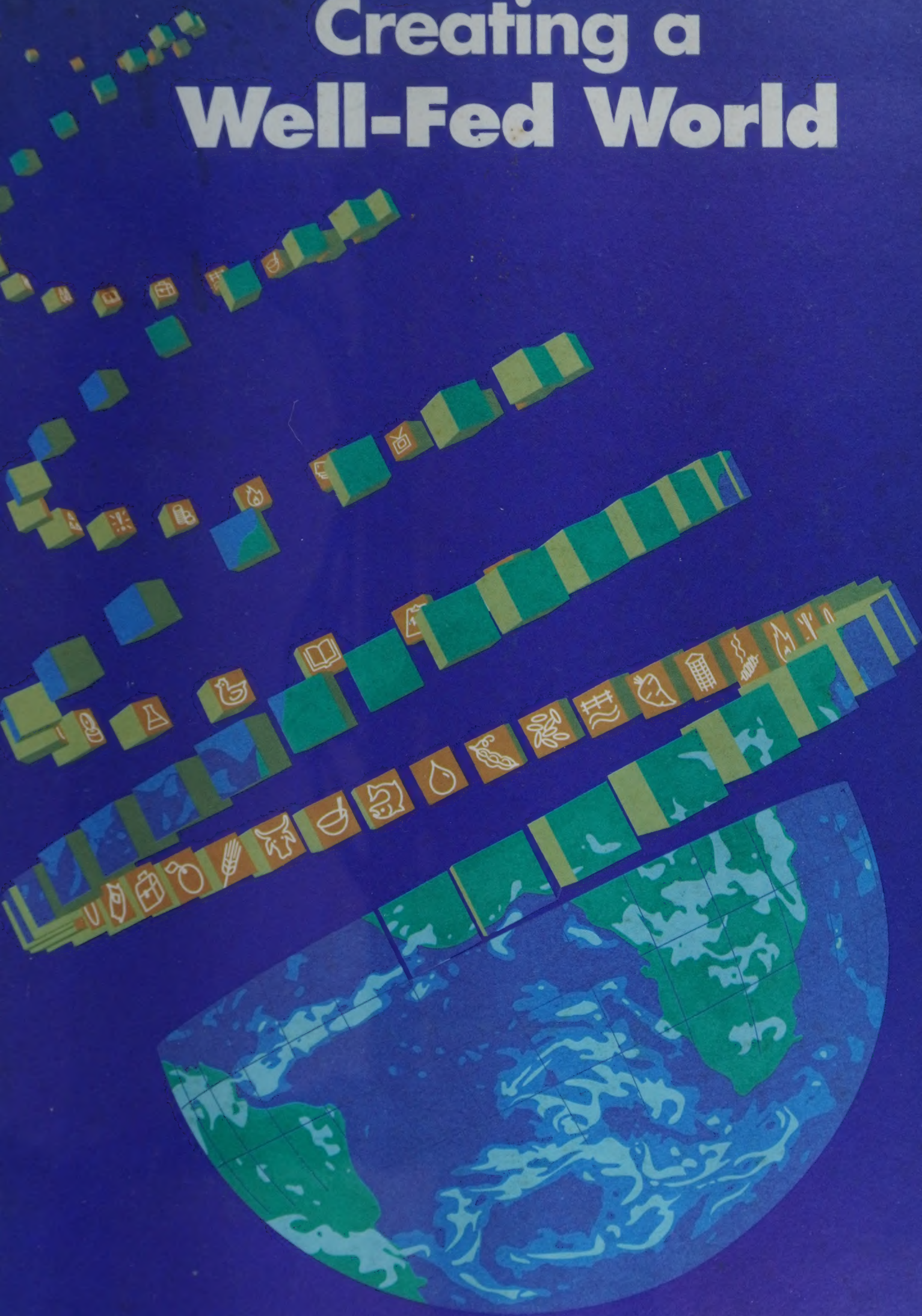


Food and Nutrition:

Creating a Well-Fed World



Food and Agriculture Organization
of the United Nations

Foreword

The 1990s is emerging as a decade of change, challenging us all with the opportunity to build a better future, in which people are at the heart of development. To build secure foundations for a new tomorrow, we must solve the persistent problems of today: poverty, starvation and environmental degradation.

With hundreds of millions of people already victims of hunger and malnutrition, creating a well-fed world must become our leading priority. We must not wait for the next food crisis before we confront the root causes of malnutrition and starvation. Nor should we wait until the penalties of inadequate diets and undesirable life-styles undermine health and make themselves felt among those who are often considered to be better fed.

Combating hunger and malnutrition is not merely a question of producing more food. Globally, enough is produced to feed everyone but not everyone has an adequate share. That will not change until we commit ourselves – as individuals, nations and members of the international community – to resolving the inequities and lifting the barriers that deny some people access to sufficient food.

A sustained, long-term commitment is required to mobilize resources and expertise from all sectors – from government and industry, from farmers and consumers, from scientists and the countless thousands who prepare or sell food.

In selecting food and nutrition as the theme for World Food Day this year FAO aims to identify some critical issues and to highlight examples of policies and programmes that have successfully addressed them. World Food Day activities will encourage governments, institutions, organizations and individuals to intensify their efforts to ensure access by all to the food they need for a healthy life.

These activities will also help prepare the ground for the International Conference on Nutrition, jointly organized by FAO and the World Health Organisation, which will take place in December. At this conference, governments will be asked to make commitments – commitments that will establish people and their nutritional well-being as the first priority.

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Overview

The gap between a well-fed world and that of today, with hunger and malnutrition afflicting hundreds of millions of people, is a measure of human suffering, not human development. It is a gap we have the capacity to bridge, but progress in producing food is not enough to span it.

Malnutrition exists in some form in every country. A lack of sufficient energy in the diet is the major nutritional problem in many low-income countries but it also affects some people in wealthier countries. Micronutrient deficiencies can cause severe illness. Overnutrition contributes to diet-related 'life-style diseases', such as heart disease and certain cancers. Food-borne infections and illness also occur worldwide.

Malnutrition is an avoidable tragedy with enormous social and economic costs in wasted human potential. Poverty is the prime cause of hunger and malnutrition, which are exacerbated by rapid population growth, an unhealthy environment and lack of education.

Malnutrition and poverty often encourage unsustainable agricultural practices as the poor desperately try to produce adequate food. At the other extreme, diet-related chronic health problems place an additional burden on families and health-care systems.

Enough food is produced globally to feed everyone but not everyone has access to adequate food at all times – the basic requirement for food security. A broad range of factors are responsible for this, including a lack of purchasing power and poorly developed marketing, storage and distribution systems.

Agriculture is the main source of income and employment, as well as food, for many in the developing world. Improvements in agricultural

productivity, however, must be environmentally sustainable and reforms must be socially acceptable and economically viable.

Poor people lack either the means to produce enough food for themselves or the income to buy it. The food they can get is often of low quality or fails to provide the dietary variety necessary for proper nutrition. Inadequate fuel and water supplies can lead to poorly prepared or processed foods.

Some people are more vulnerable to undernutrition than others – very poor women and children in particular. Those at greatest risk of going hungry just manage to survive under normal circumstances. They have no reserves to see them through difficult times. The landless and the rural poor are most at risk from food shortages.

Eliminating hunger and micronutrient deficiencies is the most pressing priority. Fortunately, there are solutions that have been successfully demonstrated in different parts of the world.

Improved food handling during harvesting, processing, distribution and preparation reduces the risk of contamination by micro-organisms or infestation by parasites. Improved farming practices can limit environmental pollution and harmful residues in food from fertilizers or pesticides.

These threats to food quality are relatively easily identified; ensuring that people have access to food is often more complex.

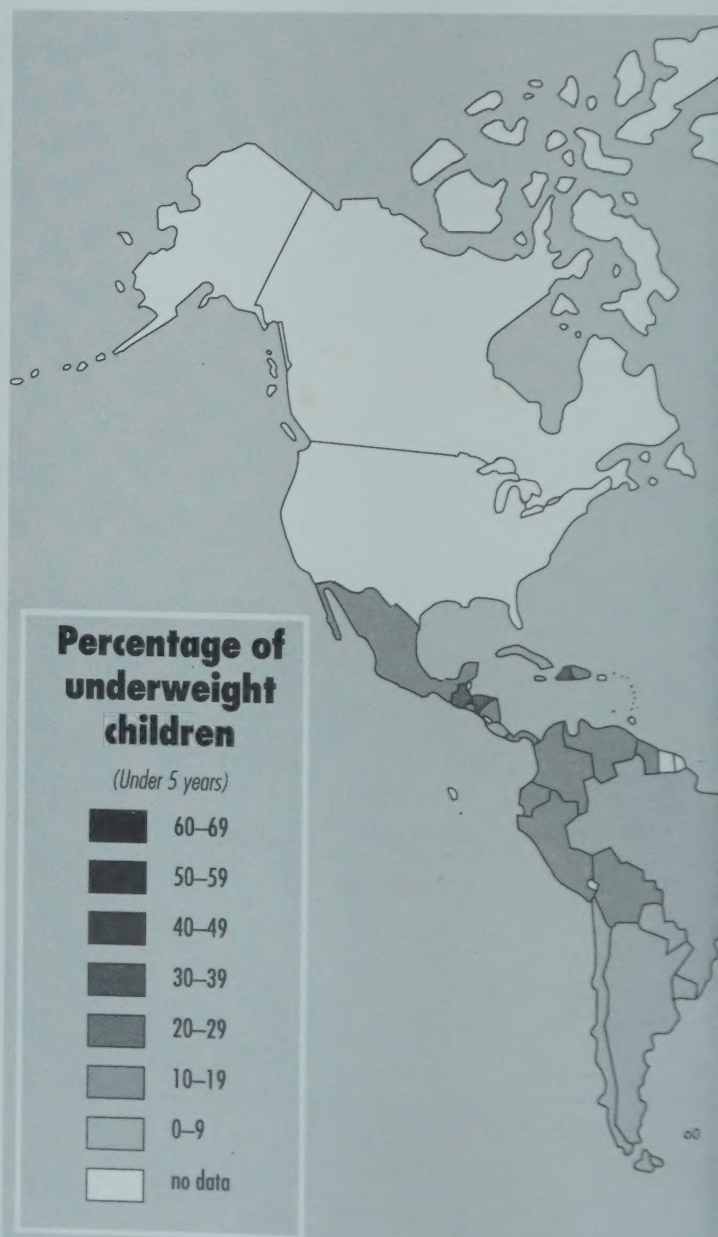
Environmental conditions limit what can be grown.

Who owns the land affects what is grown and whether it is produced for local consumption or for sale outside the community.

Government policies encourage or discourage certain types of production and determine how national resources are used. International trade regimes and world markets determine export and import prices.

Foreign exchange reserves limit a nation's ability to compete for products on world markets, while high levels of foreign debt determine how export income is spent. All too often, the pressure of structural reform and debt servicing leads in the short term to a reduction in support to the poor and hungry.

Improving nutritional well-being depends upon improving overall



social and economic development, in which nutrition is a priority.

Better education and information about good nutrition and how it can be achieved will help. Governments want information about the nutritional status of their people and their levels of food security. Individuals want to know how best to use the resources they have and how to minimize their risks.

With these concerns in mind, FAO and the World Health Organization are jointly sponsoring the International Conference on Nutrition, to be held in December 1992.

Governments, after a preparation process involving non-governmental organizations, industry, academics, unions, consumers and other interested groups, will set the agenda for

improving nutrition.

The hopes pinned on this conference are based on the knowledge that, working together, the nations and peoples of the earth do have the capacity to create a well-fed world. ■

Three faces of malnutrition

■
Undernutrition results from consuming inadequate amounts of the foods necessary to meet the body's energy or nutrient requirements or from poor health, particularly infectious disease, which impairs the body's ability to absorb and use food.

■
Micronutrient deficiencies can occur when the diet lacks adequate amounts of the essential vitamins and minerals needed for growth, development and good health.

■
Overnutrition results from an excessive or unbalanced long-term food intake that exceeds the body's energy or nutrient requirements.



Malnutrition today

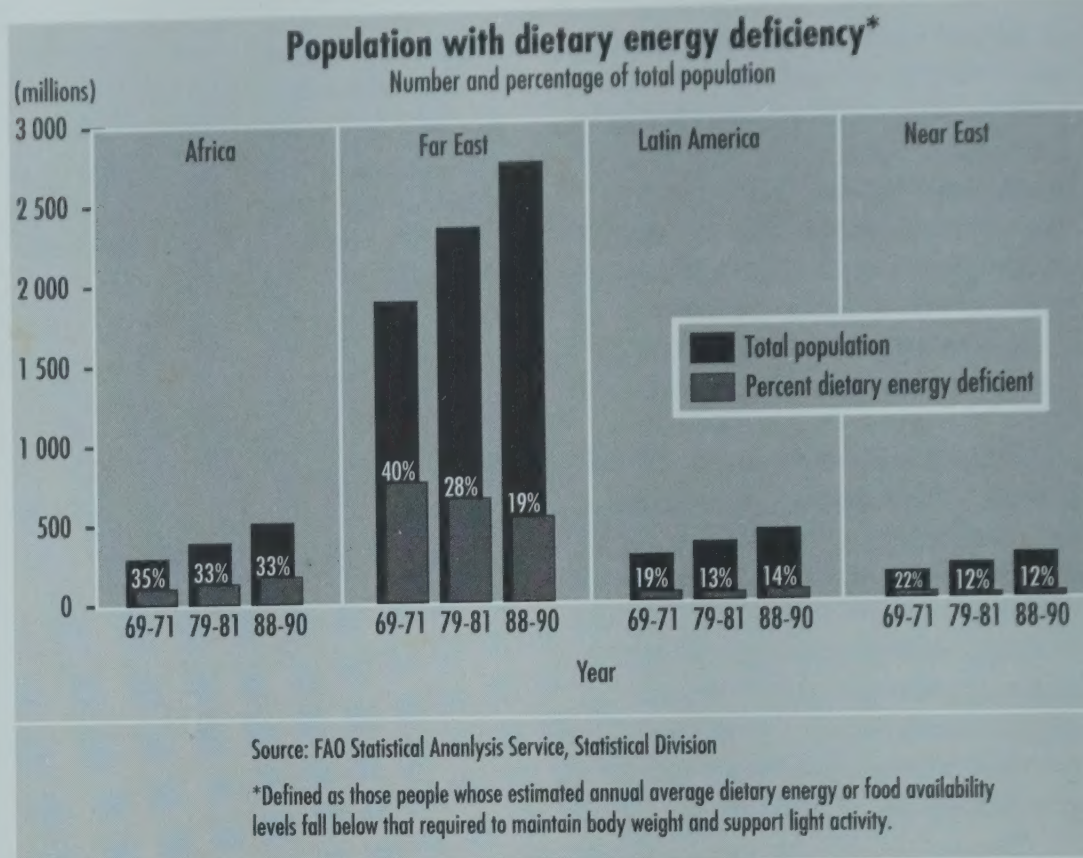
According to the preliminary findings of FAO's latest world food survey, over 780 million people in the world are undernourished. This is more than the entire population of Europe, or North America or Latin America or the whole of sub-Saharan Africa. Nearly 13 million children under the age of five die every year as a direct or indirect result of hunger and malnutrition and from infections.

While the percentage of hungry people is declining – it now stands at about 20 percent of the developing world's population – their actual numbers are not, since the world's population is still increasing faster than the rate at which people's nutritional well-being is improving.

High birth rates and declining death rates mean poverty and rapid population growth are reinforcing each other, especially in the rural areas of the developing world.

For those suffering from hunger and malnutrition, the consequences are grave. Malnutrition affects growth and reproduction, and undermines health, learning capacity, activity and the overall quality of life and well-being. For nations, such a loss of human potential has social and economic consequences that no country should tolerate.

The picture varies from region to region. Most of the hungry are in Asia, home to more than half of the world's population. In South Asia two out of three children are estimated to be underweight – more than 100 million children in total. But



only in sub-Saharan Africa have both the numbers and prevalence of underweight children increased, with about one in three affected.

Anyone who is poor or otherwise

disadvantaged socially or culturally, runs the risk of malnutrition. Women and children are particularly at risk from hunger. Poor women usually have low status and work long hours.

Many marry young, have frequent pregnancies and are undernourished. Their babies tend to be underweight (2.5 kg or less) and are more likely to die in infancy.

Children, especially the under-fives, are most vulnerable to a malnutrition/infectious disease cycle. Being undernourished makes them more susceptible to infections. Infections and parasites make them prone to malnutrition. Poor nutrition in early life can handicap them for the rest of their lives.

Life on a tightrope

A poor urban extended family of five adults and five children in India lives in a tiny windowless room. They share a kitchen with two other families and sleep in the building's hallway. They have electricity, but the women stand in line for water from a street stand-pipe three nights a week. An open drain outside is their toilet but it gets blocked and overflows during the rains.

Their income is irregular and about 80 percent of it is used for food. Both adults and children are shorter and weigh less than normal for their age. One daughter died at 11 months after fever and diarrhoea; the other children have frequent bouts of diarrhoea. In a crisis, the family cuts down on meals, the main earners reducing their intake least, the female children the most.

A pastoral family of six in the Malian Sahel faces different problems. Their food supply varies with the seasons. It is greatest in October, after the millet harvest. During this time, family members gain weight. From December to June food is scarce and they lose weight. In the rainy season, nearly half their energy comes from food that they collect from the wild.

Most of their cash income comes from selling animals and half of it is spent on buying cereals. When the rains are poor, the price they get for their livestock falls. One year, as grain prices doubled and livestock prices fell, the value of a beast fell from the equivalent of 1 300 kg of millet to 520 kg.

The most vulnerable to hunger in any country are those who in normal times are just surviving. Many people are chronically malnourished, never getting enough food to meet their energy or nutrient needs. In other cases, this happens temporarily, for example, in the pre-harvest season when they have used up the stores from the previous year but cannot afford to buy more food.

When food is in short supply and prices rise, the poor in rural areas, especially the landless, are more likely to be malnourished than those in urban areas. Poor infrastructure and distribution systems make it harder to get food to rural areas when shortages occur.

The urban poor, however, tend to live in overcrowded conditions, without safe water and sanitation, increasing their risk of infection and disease. Food-borne infections and illness due to poor quality or unsafe food are particularly serious for people under such conditions.

Vitamin and mineral deficiencies, including vitamin A, iodine and iron, affect more than 2 000 million people worldwide. These micronutrient deficiencies can cause retarded growth and brain development, impaired vision, goitre, miscarriage during pregnancy, still-births and infant deaths. People who do not have enough to eat are at greatest risk, but even those with enough food may suffer deficiencies if their diets lack essential variety.

Ironically, while hunger and deficiency

problems remain, others persist that stem from overnutrition, contributing to diet-related diseases like heart disease, adult diabetes, and some cancers.

The problems of overnutrition are found increasingly in developing countries and there is also hunger in the industrialized world. In some countries both undernutrition and overnutrition exist side by side. They can occur within the same household. Where this is true, the problem usually lies in cultural factors and a lack of knowledge about each family member's needs.

The cornerstone of good health and nutritional well-being is a varied diet that meets all of the body's energy and nutrient requirements. Preventing malnutrition starts with meeting the basic needs of individuals of all ages.

The challenge is to ensure that everyone has enough good-quality and safe food and a varied and balanced diet to help them lead an active, healthy life. ■

In brief

More than 780 million people are hungry – they do not get enough food to meet their energy needs.

Over 2 000 million people are affected by micronutrient deficiencies.

Diet-related diseases are no longer confined to the affluent industrialized countries.

The cornerstone of good health and nutritional well-being is a varied diet that meets all of the body's energy and nutrient needs.

How do you measure up?

The body mass index (BMI) is a simple indicator of fatness or thinness and possible health risks for adults. The higher the number, the bigger (and presumably fatter) you are, the lower the number, the thinner.

To calculate your BMI, take your weight in kilograms and divide it by your height in metres, squared. For example, the BMI for a 60-kg individual 1.6 m tall is 23.4 – i.e. 60 divided by 2.56. For someone of the same height weighing 80 kg, it would be 31.2. A BMI of 20-25 is normal; over 25 is overweight; and 30 and above is obese. Overweight people are at greater risk from diet-related diseases.

Using the BMI as an underweight indicator is relatively new. From 18.5 to 20 is thin but carries little risk to health. Below 18.5 is underweight with some risk, especially if there is any stress on the body, such as infection or pregnancy. The risk increases as the number declines. Below 17.0 indicates a reduced capacity to work and markedly increased susceptibility to illness.

Collecting and monitoring BMIs for the adult population in a country can provide a good indicator of their changing nutritional status.

Food security for all

Globally, there is enough food for all. Average food availability rose from 2 290 calories per person per day in 1961-63 to 2 700 calories in 1988-90 despite the world's population increasing by some 1 800 million. Producing enough food globally or nationally, however, is not sufficient to guarantee food security.

Food security means ensuring that all people at all times have access to the food they need for a healthy, active life. It arises from stable food supplies that are both physically and economically accessible to all.

Poverty is the root cause of food insecurity. Food insecurity exists wherever there are extremely poor or seriously disadvantaged people in both rich and poor countries. It is estimated that more than 1 000

million people live in poverty. They face a high risk of undernourishment.

Political, ecological and economic changes can also threaten food supplies. Conflicts and war disrupt them. Land degradation impoverishes the resource base and adverse weather affects supplies.

In the early 1970s, food production declined sharply in several major supply areas simultaneously. The location of international grain stocks, mainly in the industrialized world, and sudden purchases forced grain prices up and precipitated a major food crisis for poor importing countries.

A food-secure country can produce, store or import the food it needs and distribute it equitably.

International assistance is still needed to help many countries achieve this.

Three types of countries are particularly prone to national food security problems. One type has very low average food consumption levels, another has large fluctuations in food supplies coupled with low consumption and the third type has large numbers of very poor people.

Increasing production alone is not enough to improve food security. In some areas increased agricultural production has generated employment and income and has contributed to household and regional food security. In other areas, however, the poor have not benefited from such increases. Tenant farmers have been evicted and owner-occupiers forced to sell land or homes because they could not take advantage of new production methods and keep pace with competitors.

An adequate national food supply has to be coupled with appropriate



marketing facilities, equitable rural development policies, price stabilization mechanisms and, most important, adequate means of production or income-generating opportunities for the poor.

For individuals, food security at the household level is crucial. A food-secure household can grow or gather its own food, or earn money to buy enough food to meet the nutritional needs of all family members throughout the year.

Different types of households face different threats to food security. For smallholders, pests and drought may be the major threats; for poor households that buy their food, large, sudden price rises or unemployment may be the major problems. Ultimately, of course, production, distribution and price are all linked as part of the wider socio-economic scene.

The problem for many poor households is that most – or all – of their work and income only provides enough to meet their needs in

normal circumstances. They have no reserve capacity to cope when harvests are poor, when there is no work or when supplementary foods – such as wild forest foods – are unavailable.

Food security can only be achieved through broadly based actions that address the many factors that determine people's ability to obtain the food they need.

For poor, food-importing countries with little foreign exchange, a more equitable international trade system is needed that enables them to earn adequate income and obtain food during times of crisis. Development programmes and a fair trading environment will help long-term progress in these countries.

Agriculture, forestry and fisheries do not simply produce crops and commodities; they provide livelihoods and improve nutrition. Their products create employment both directly, on the land and seas, and indirectly in processing and related industries. Production should be geared to deliver

In brief

Food security means all people at all times have both the physical and economic access to adequate supplies of good-quality and safe food needed for a healthy and active life.

Food-secure households can grow or gather their food or earn sufficient income to buy it and are not at risk of losing that capacity.

Broadly based actions that go far beyond the agricultural sector are required for food security.

Agriculture, fisheries and forestry provide livelihoods and improve nutrition but government policies create the broader framework for food security.

a wide range of foods.

Governments can do much by setting priorities and policies that will help improve food security.

In Botswana, for example, a drought early warning system backed by comprehensive relief measures has helped prevent starvation despite a long-running drought. A cash-for-work

programme provides income for rural people, who can then buy food from private traders. It keeps the normal food distribution system operating and reduces the pressure to migrate.

The Employment Guarantee Scheme in Maharashtra, India, offers adults the option of jobs on public works programmes. It is self-starting relief work: people decide for themselves when they need such work. This may be triggered by local conditions to which national

Refugees

Pellagra, beriberi and scurvy are deficiency diseases long since relegated to the classroom of the nutrition student. Yet they are reappearing in refugee camps all over the world. Today, at least 35 million people have either fled their countries or been displaced internally. If they were to be brought together in one 'refugee nation', it would be a medium-sized country – easily the poorest in the world – with no natural resources, high population density, terrible health and nutrition and few prospects.

Refugees depend on food provided by governments and donors. The solution to improving their nutrition seems to be administrative rather than technical. We know what people need for a healthy life: nutritious food, clean water, sanitation, health care and shelter. Refugees try to meet their needs as best they can. If their needs for water, fuel, shelter and clothes are not met, they must barter. They may even sell the food rations provided, just to get a more varied diet or to buy fuel.

Donors and governments should supply rations based on nutritional needs rather than immediate food availability – or on excesses in their own country. Staples alone are not enough. Complementary foods that are high in vitamins and minerals are required, like meat, vegetables and fruit.

schemes are not responding.

In Bangladesh, improving rural roads and other infrastructure has helped strengthen food security. Villages with better infrastructure had significantly fewer food-insecure households than other villages without such facilities.

Economic development in rural areas increases household income. Many farming households obtain as much as two-thirds of their income from off-farm, non-agricultural sources. Studies have shown that, after food processing, small-scale forest-based enterprises provide a major source of off-farm income in many countries. This income is particularly important for the poorest, the landless and women.

When poor households can buy more, and improve their living conditions, they become less vulnerable to temporary, short-term threats to food security.

Preventing post-harvest losses, for example, can effectively increase production. In Senegal, a lack of workers at harvest time meant crops were left in the fields after harvest and became infested with rodents and insects. Locally produced threshing

developed in a joint venture between Senegalese and Netherlands companies, provided the solution.

For subsistence farmers who start to grow cash crops for uncertain markets, continued production of some food crops is essential to safeguard their food security. Development of household gardens, which are an important source of food in Africa, protects farmers from market fluctuations. Promotion of under-exploited traditional food crops can also enhance food security.

Trees contribute to food security since they produce fruits, leaves and nuts at different times from the annual crops, often surviving when crops fail. This is particularly important in drought-affected and dry zones.

In Bolivia, guaranteed purchases –

part of a food aid package – provide peasant farmers with a market for *quinoa*, a nutritious traditional grain. It is used in feeding programmes in hospitals and other institutions.

Providing credit to poor households – especially to women – improves household food security by allowing people to invest in increasing their own productivity. The Grameen Bank in Bangladesh, for example, gives unsecured loans, usually to small groups of poor people, and offers help and advice to borrowers until they can manage for themselves.

Unless the food available in households is shared out fairly it is still possible for individuals to be malnourished. In many instances, men receive enough food to meet their basic needs, while women and children do not.

There is no single means for guaranteeing food security. It requires a broad range of programmes backed by sufficient national and international commitment to implement them and political mechanisms that respond to basic human needs. ■

Famines – preventable tragedies

Only rarely do famines come without notice. Mostly they grow from steadily deteriorating conditions, the results of which can be anticipated and prevented through appropriate action. When governments – and the international community as a whole – fail to respond to such indicators, famines must be considered human-induced disasters.

A study of famine in three of the poorest African countries – Ethiopia, the Sudan and Burkina Faso – shows similar underlying conditions: climatic fluctuations affecting production; people with few assets; lack of employment opportunities; low levels of farm technology; isolation from major markets; poor education; and poor health and sanitation.

Poor people do their best to cope. There is no universal approach but they tend to follow similar patterns. Households try to minimize their losses. Farmers diversify their crops, plant in widely dispersed fields and use multiple seed varieties. Pastoralists keep mixed-species herds and preserve last-resort grazing grounds. All groups try to diversify their sources of income, store food, and buy animals or jewellery as a form of savings. When production and income are low, they sell off possessions, borrow from friends, have fewer meals and rely on famine foods, such as leaves, wild roots and rodents. If the crisis peaks and there is no outside help, they must move – or starve.

Repeated crises in these regions, made worse by poor rural infrastructure – and armed conflict in the Sudan and Ethiopia – have made households increasingly vulnerable.

Famine prevention measures have helped. They include advances in agricultural technology, labour-intensive public works, better storage and distribution policies, emergency relief and food aid. But a lack of political and financial commitment has prevented real improvements in long-term food security.

Sustainable food production

Land, water, plants and animals are the basic resources upon which our nutritional wellbeing depends. Yet they are threatened by environmental degradation, the extinction of entire species and inappropriate production methods.

These threats may seem distant to urban dwellers, but rural people can see the links between the land, water and food every day. Many traditional systems make direct use of all the resources around them: land for growing crops or grazing animals; forests for fuel and supplementary foods; and water for drinking, irrigation or as a source of fish.

The villagers of Ban Nong Khong in northeast Thailand, for example, grow rice as their main staple. The nearby forest provides them with fuel, vegetables, bamboo shoots, mushrooms, fruits, wild boar, rabbits, honey and medicinal plants. They also raise fish in ponds near the village or catch it in streams. For cash, they grow cassava and kenaf. Their food security depends on maintaining the quality of the environment.

The natural resources of the planet must not only continue to produce the foods needed today, but also the food needed for a world population expected to increase by 3 200 million people by the year 2025.

Rapid population growth is a prime cause of land degradation in most of the developing world. Slowing population growth will help to slow down further degradation. At much as 80 percent of the loss in

forest cover may be due to the demands of poor, expanding populations. More than 500 million people make a living from shifting cultivation as a subsistence farming system, but rapid population growth threatens its viability.

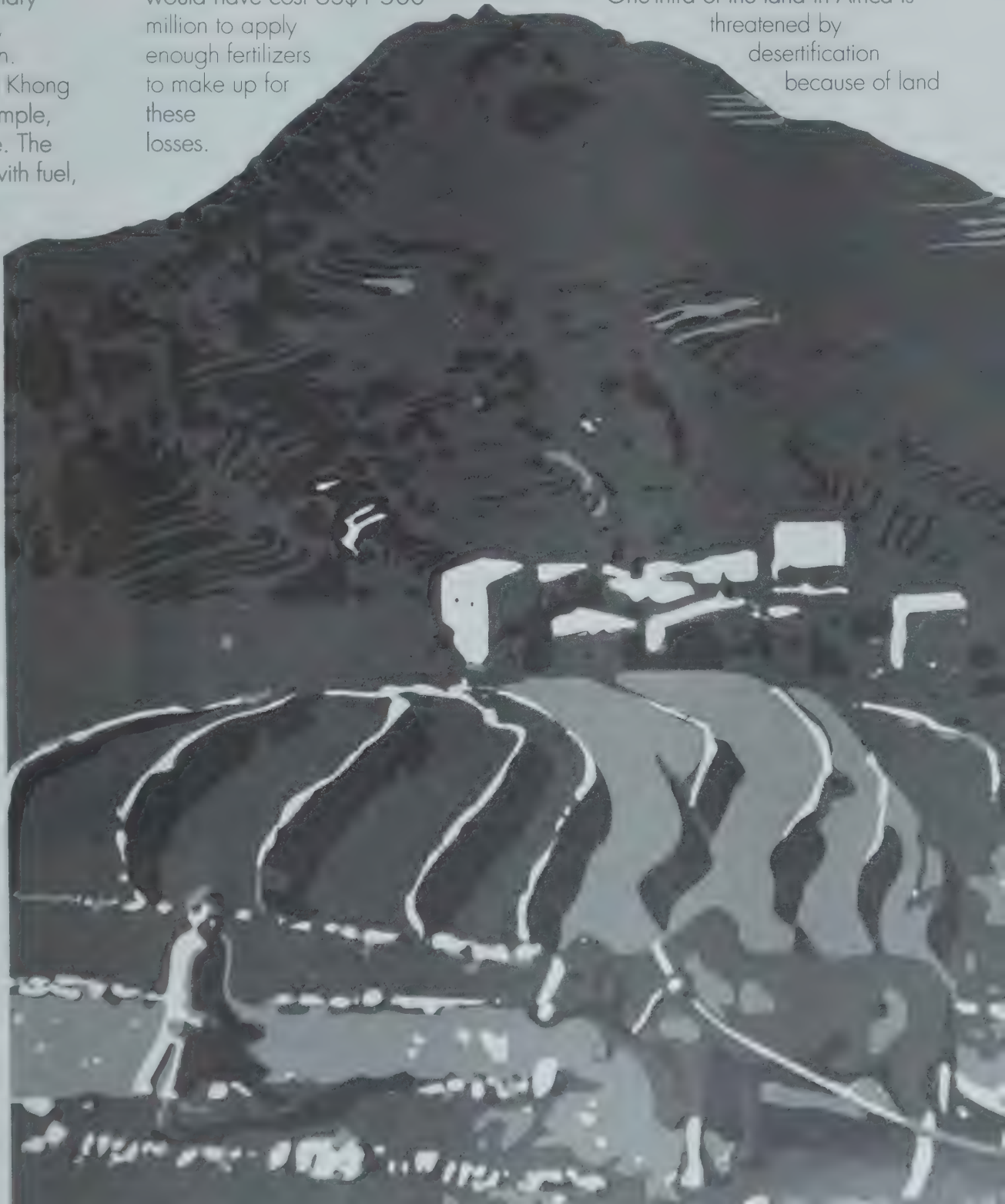
Erosion is a massive hidden cost and environmental threat, particularly in Africa. In Zimbabwe, for example, erosion carries away vast quantities of nutrients from the soil. A study in 1984-85 estimated losses as three times more than the amount of fertilizers applied during the year. It would have cost US\$1 500 million to apply enough fertilizers to make up for these losses.

Overexploitation and water pollution threaten fish production, which provides the bulk of animal protein in the diets of many people from developing countries.

Our survival depends upon reversing such degradation and making existing resources more productive. Because of their number and their close relationship with the environment, rural people are the key to reaching these goals.

The rural poor often produce food in ways that damage the environment – because they have no other choice.

One-third of the land in Africa is threatened by desertification because of land



mismanagement, in particular from overgrazing and increasing demands for fuelwood. Farmers and pastoralists do not deliberately destroy the land. They are merely striving to feed themselves and their families, using the only available means.

To change practices, poor rural people need access to the appropriate tools, technology and resources. Those developing such tools also need to understand the causes of inappropriate land use.

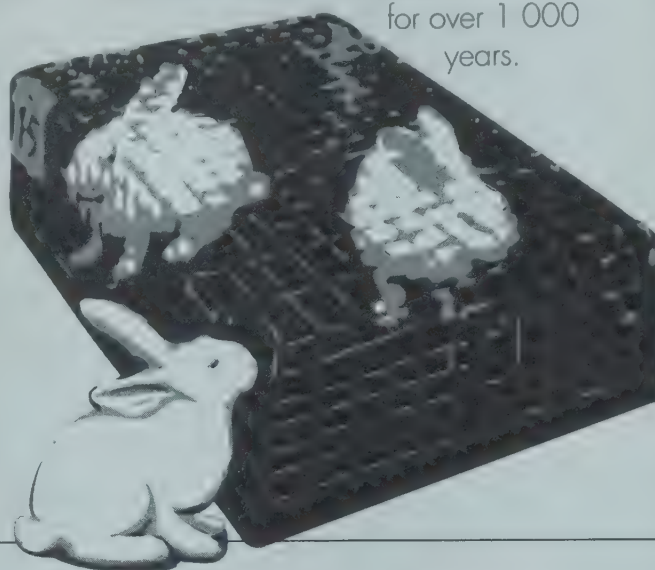
The slopes of Mount Kenya, for example, were becoming badly eroded despite huge conservation projects. Insecurity of land tenure had led farmers to dig ditches to mark the boundaries of their plots – and these were causing erosion. Now, after a land tenure reform programme that gave the farmers secure rights, and a decision by the courts not to accept ditches as proof of property boundaries, the region is terraced, hedges mark boundaries and special grassed banks have been built to reduce erosion.

A step toward developing sustainable agriculture was taken by FAO in 1991 in the den Bosch Declaration and Agenda for Action on Sustainable Agriculture and Rural Development. It called for a redirection of many policies and practices to include:

- the active involvement of rural people in developing sustainable farm management systems;

- giving them legal rights and obligations over land, trees and other natural resources; and
- improving their capacity to manage these resources.

In places as far apart as Bali and Yemen, for example, the need is to maintain and develop the complex water management systems, running from the high mountains to the plains, that have sustained food production for over 1 000 years.



Backyard rabbits

Backyard animals are handy sources of income and milk, meat and eggs for the family. Cattle, buffaloes, sheep and goats thrive on marginal or fallow lands and convert crop residues and by-products into milk and meat. In India, a well-organized dairy cooperative movement has tapped milk produced by farmers keeping one or two cows or buffaloes. As a result, over 5 million farm families in 49 000 village cooperatives sell on average about 8 million litres of milk every day, retaining 25 percent for their own consumption.

Small-scale rabbit keeping is growing in popularity in Mediterranean and tropical countries. Households in Gabon, Côte d'Ivoire, Mexico, Mozambique and Thailand produce 15-20 consumable rabbits per year per doe. The animals are fed on available green forage. A family keeping six to seven does can expect to have two rabbits each week for home consumption or for sale. This represents a minimum supply of 2.3 kg of meat per week. Similarly, guinea-pigs in the Andes, capybaras in northern Brazil and Venezuela and cane rats and giant snails in Africa are important sources of meat.

Integrated livestock-fish production systems are highly efficient, dependable ways of increasing animal protein supplies. A 0.25-ha pond can produce one tonne of fish per year. If pigs, ducks or other waterfowl are raised on slatted floor housing above the pond or fed near the pond, fish yields double without any feed supplement for the fish. Such ponds have made significant contributions to food production and incomes in southeast Asia and China.

In southern Brazil, it means changing the way the land is farmed: favouring minimum tillage techniques that reduce soil damage and energy costs and integrate crop production and cattle rearing.

In economic terms, it means including environmental considerations in calculations of costs and benefits.

In research and development, more work is needed in areas that will bring greater food security to the poor, such as improving indigenous technologies and developing new early- and late-maturing varieties to reduce seasonal malnutrition.

Sustaining food production in the developing world depends largely on the actions of millions of small farmers – over 300 million farm households – who form the backbone of the rural economy.

Measures that enable them to increase production sustainably will

build on the strengths of existing systems. One of these is the tradition of home gardens, which often use trees and plants of different heights and varying root depths to make best use of sunlight and soil. Trees are often grown as a perennial crop with annual crops growing beneath them and thereby producing more on the same piece of land.

A typical example of a highly intensive and productive system, evolved over hundreds of years by farmers, is the Pekarangan system of Indonesia. Farm households cultivate

intensively diverse perennial and annual crops in a small area near the house. They usually also raise poultry and/or fish. On average, this system provides 50 percent of household fruit and 40 percent of vegetable and tuber consumption, as well as a significant proportion of income, for some 30 million rural households.

Strong traditions of home-gardening also exist elsewhere in the tropics: the Kandyan forest gardens in Sri Lanka, the Chagga gardens of the United Republic of Tanzania, the shambas of Uganda and Kenya, and the kitchen gardens of the Caribbean to list but a few. These gardens help satisfy the subsistence needs of poor farmers and, because of their diversity, can provide a sustained supply of fruits and vegetables, starchy staples such as root crops and cooking bananas and medicinal plants as well as animal protein.

The production efficiency and ecological sustainability of these gardening systems can sometimes be improved through small technical changes and improved management techniques. In the Pekarangan lands, for example, FAO is contributing to the development of a strategy to improve their performance. This may include the elimination of old and unproductive plants, in-filling with better genetic stocks, pruning to shape the canopy and regulate shade, proper

spacing and the control of pests and diseases.

While home gardening can be an important factor in improving rural nutrition, only intensification of food production will enable farmers to feed both rural and urban populations. By the year 2025, nearly two out of every three people will live in cities and the number of cities with populations over a million is expected to more than double, to almost 650.

To feed this swelling urban population without further degradation of the environment, food production should be intensified by using natural resources more efficiently and in a sustainable way. Otherwise production can only be increased by clearing and ploughing more land, encroaching further on forests and other fragile ecosystems. Similarly, intensification of food production should be achieved by diversification

In brief

By the year 2025, there will be an estimated 3 200 million more people to feed.

Sustainable use of our natural resources is threatened by environmental degradation, genetic erosion and inappropriate production methods.

Rural people living in over 300 million households must be enabled to reverse land degradation and use their resources more productively.

Existing systems, such as diversified home gardens and complex water management systems, can be strengthened.

Sustainable agricultural development creates employment, provides stable incomes, improves access to food and provides an appropriate food supply.

Protecting the soil

Human life depends for its existence on less than a metre depth of mixed organic and inorganic debris – soil. Only about 11 percent of the earth's land surface, some 1 500 million hectares, is cultivated. A similar amount could be cultivated with sufficient investment in drainage and irrigation but, based on current rates of land degradation, it is estimated that between 100 and 140 million ha will be lost over the next 20 years.

Land degradation tends to creep up on farmers – salts build up slowly in badly irrigated and poorly drained land, poisoning it. Land is damaged by overcultivation or overgrazing, and eroded by wind and water. Past civilizations around the Mediterranean and in Central America collapsed partly as a result of soil erosion. Soil can be quickly destroyed, but generally it takes between 3 000 and 12 000 years to build enough soil to form productive land.

For more than 50 years the approach to soil conservation has tended to be top-down, with engineers making plans for farmers to follow. This approach has failed to deal with the causes of the misuse. A bottom-up approach is needed, which understands farmers' methods and reasons and makes safeguarding the soil part of farming practices. Farmers themselves become the conservationists.

Building on traditional systems that conserve the soil can be highly successful. The Konso farmers in southwestern Ethiopia, for example, use elaborate terracing and water harvesting systems, supported by mixed crop and livestock production. Extensive manuring, mulching and fallow practices using plants, shrubs, trees and animals have worked for hundreds of years.

rather than by using increased amounts of fertilizer and other external inputs.

There are examples from all over the world that can be used in restructuring the approach toward sustainable agricultural and rural development. The essential step is to recognize the need and act accordingly. ■

Ingredients for food security

No single recipe will ensure food security for all individuals, households or nations. The basic ingredients – illustrated below – are well-known, although their quality and availability vary greatly from region to region. FAO's comprehensive national food security programmes are designed to help countries develop their own recipes for success.



Land and water

The quality of land and water resources affects overall productivity. Ownership patterns influence the way the land is managed.



Storage facilities

Storage conditions affect the safety and quality of food, the level of waste, and the amount held in surplus for future emergencies.



Processing

Farm produce is processed in various ways – dried, milled, canned, bottled, etc. The quality of processing determines the food's nutritional value and longevity.



Prepared food

People eating outside the home – at street stalls, restaurants or factory canteens – depend upon good standards in food preparation for high-quality, safe food.



Money and credit

Both individuals and governments need money – or credit – to finance growth and development.



Family and culture

Family backgrounds, cultural traditions and religious beliefs influence acceptance or rejection of certain foods and eating patterns.



Transport

Better transport means fresher food; poor transport facilities may hamper distribution and discourage production.



Resource management

The ingenuity, technical know-how and management skills of a nation's food producers determine how well resources are used.



Employment

The nature and location of food industries – from production to processing and distribution – determine who benefits from the employment and income they create.



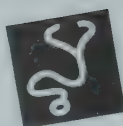
Income

People who do not produce their own food need employment – formal or informal – to earn an income so that they can buy food.





Water and sanitation
Clean water supplies and adequate sanitation facilities are essential for good nutrition.



Health care
Primary health care and an environment that reduces infectious disease enable people to be better nourished by the food they consume.



Farm equipment and inputs
The availability and appropriateness of equipment and inputs such as fertilizers affect land quality and productivity.



Radio, TV and newspapers
The mass media can raise public awareness of nutrition and publicize ways to improve it.



Exchange rates

Currency values affect the price of exports, the cost of imports, and the balance of trade. Overvalued rates encourage food imports and may undermine local food production.



Distribution

The effectiveness and cost of the distribution chain — storage, transport, wholesaling and retailing — affects food quality, availability and accessibility.



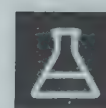
Kitchen

Raw and processed food is transformed into meals in the home by cooking and presenting it in culturally acceptable ways.



Education

The availability and content of general and specialist education influences people's knowledge about good nutrition and how to achieve it.



Research and development

Scientific research and technological developments bring new production techniques and greater understanding of how diet affects well-being.



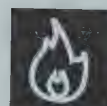
Advertising

Advertising promotes particular foods and can therefore encourage good — or bad — eating habits.



Political structures

The responsiveness of political structures to the needs of the poor is a key factor in ensuring food security.



Fuel

Fuel is needed for cooking and preserving food. Over 2 000 million people in the developing world depend on increasingly scarce supplies of wood and charcoal.



Government policies

Government policies in many areas — including agriculture, forestry, health, public works, interest rates, budgets, and social services — affect access to safe food.



Ending hidden hunger – variety is the key

Each year, at least 500 000 children become partially or totally blind because of vitamin A deficiency. The first obvious sign of vitamin A deficiency is night blindness when children cannot see properly at dusk.

Untreated, this deficiency leads to partial or total blindness and even death. Between 20 and 40 million children, however, suffer less obvious effects: they fall ill more easily and their growth is stunted.

Vitamin A is just one of many micronutrients essential for nutritional well-being. Iodine is another. Some 1 000 million people are at risk of iodine deficiency, the most visible effect of which is goitre, a swelling of the thyroid gland in the neck.

Iodine deficiency may cause spontaneous abortions, still-births and infant deaths. In infancy, it interferes with brain development and can cause irreversible mental retardation. Worldwide, some 20 million people are estimated to have brain damage as a result of a lack of iodine. In its severest form, it causes cretinism.

Anaemia, caused by iron deficiency, is one of the most widespread nutritional disorders, affecting some 1 500 million people. It is the main cause of 20 percent of maternal deaths in developing countries.

Insufficient food variety is the primary cause of micronutrient deficiencies. The poor are most at risk; even after spending most of their income on food, they often cannot obtain the necessary dietary variety to meet their nutrient needs.

Other essential micronutrients, such as

vitamins C and E, folic acid and zinc, also affect our health. A deficiency in one of these can affect the body's ability to absorb and use others.

Different ingredients in the diet can also affect the body's ability to absorb micronutrients. Tea and coffee, for example, reduce the capacity to absorb iron, whereas oil or fat are essential for the efficient absorption of Vitamin A.

Mistaken beliefs and lack of knowledge about the nutritional value of different foods can also prevent people from obtaining these essential nutrients. For example, green leafy vegetables and fruits like papaya that are rich in micronutrients are often withheld from children and pregnant women for cultural reasons.

The best way of controlling micronutrient deficiencies is to ensure access to an adequate diet. This may involve encouraging production of fruits and vegetables or stimulating use of available ones. In Africa, home gardens provide the major food sources of micronutrients. In Viet Nam, FAO is working with government and farmers' organizations to develop family gardens, identify suitable local fruits and vegetables and train agricultural and forestry extension workers.

Vitamin A deficiency in the world



Other countries that see horticulture and home gardening as a national priority include Bangladesh, Barbados, Chile, Colombia, Honduras, India, Indonesia, the Philippines and Sri Lanka.

In the wind-swept Bolivian altiplano, one project was able to introduce plastic-roofed greenhouses that helped increase supplies of carrots, lettuce, cucumbers, tomatoes and radishes.

Another essential element is educating people to grow and eat foods rich in micronutrients. In the Philippines, research has shown that, despite fluctuations in incomes and prices, people

The vegetable 'solution'

'Our children grow better, they are sick less often and they bother us less.' For women overloaded with work, and responsible for child care, these are important benefits. Women in two villages in Guinea in the Sahel region of Africa found they had healthier children after they started feeding their children locally available vegetables rich in vitamin A.

Modifying diets is the solution for most micronutrient deficiencies. Locally available foods can often be added into diets to prevent vitamin A deficiency. An effective nutrition education programme, however, must be based on the benefits people can expect to get from making the suggested changes.

The Guinean women were reluctant to feed their children such vegetables at first, partly because it was not the practice to do so, partly because they lacked time to take on additional food preparation, and partly because they did not know of the link between lack of vegetables, child ill-health and vitamin A-deficiency blindness.



**Danger zones targeted for action
in the United Nations
ten-year programme**

make sure they eat enough of their staple foods for the energy they need. They do not, however, necessarily keep eating vegetables that provide many micronutrients.

Agricultural and forestry training schools are playing a part in teaching students more about nutrition and how to shape farming to produce a better range of food crops. In Nepal, agricultural extension staff are promoting the production of foods rich in carotene – the vegetable form of vitamin A.

Fortifying widely consumed foods with micronutrients is another way to prevent certain deficiencies. Iodized salt has been

the main method of successfully preventing iodine deficiency in many countries.

Jixian village in northeast China was called the 'village of idiots'. In 1978, 65 percent of the population had goitre and 11 percent were cretins. Then the villagers started using iodized salt. No cretins have been born since. By 1982 the goitre rate was no longer a problem. What is more, average annual incomes in the village rose dramatically as the villagers became more productive.

Vitamin A has been successfully added to butter, margarine and sugar. Flour and infant

food can be fortified with iron.

While food fortification is successful, it is not easy to implement. It is feasible mainly in countries with well developed, monitored and regulated food processing sectors.

One way to correct deficiencies once they occur is to treat the

In brief

■
Vitamin A, iodine deficiency and iron-deficiency anaemia are the most widespread micronutrient deficiencies.

■
The best way to prevent deficiencies is to ensure a varied food supply accessible to all.

■
Fortifying foodstuffs, such as salt with iodine, can provide a dietary source of certain micronutrients and dietary supplements may temporarily cure deficiency symptoms.

■
By the year 2000, governments aim virtually to eliminate vitamin A and iodine deficiency and cut iron-deficiency anaemia by at least one-third of 1990 levels.

symptoms with capsules or injections of the micronutrients. If diagnosis, treatment and follow-up are successfully carried out, immediate benefits occur, but the root causes remain.

Distribution of micronutrient supplements can be costly and difficult to administer. It should be used only as a short-term solution.

The technology and methods needed to tackle these major micronutrient deficiencies are known. At the 1990 World Summit for Children, 159 governments pledged to "virtually eliminate vitamin A and iodine deficiency disorders by 2000" and to reduce iron-deficiency anaemia

in women by one-third of 1990 levels. With continued effort, hidden hunger can be abolished. ■

Foods to prevent micronutrient deficiencies

Community workers, schools, the food industry and governments can all help prevent micronutrient deficiencies by encouraging people to eat foods rich in micronutrients. Typical sources of these important micronutrients are:

Vitamin A: Green leafy vegetables, orange- and yellow-coloured vegetables, such as carrots, and non-citrus fruits such as mangoes and papaya, red palm oil, dairy products and, for babies, breast-feeding as long as possible.

Iodine: Sea foods, iodized salt, and improved processing to limit substances, known as goitrogens, that make it hard for the body to use iodine.

Iron: Green leafy vegetables, pulses like lentils, chickpeas and beans, fruits and vegetables (these contain vitamin C which helps the body absorb iron from food), liver and red meat. Drinking tea and coffee with meals can hamper iron absorption.

Street foods – feeding the cities

Street foods – ready-to-eat foods sold by street vendors – are a vast global business. In Malaysia, for example, street food sales by more than 100 000 vendors are estimated at US\$2 200 million a year. In Senegal, UNICEF estimated that in 1979, street foods employed 40-50 000 people, while modern agri-businesses and food industries employed only 6 800 people.

This multi-billion dollar activity boasts no multinational corporations, yet it provides a livelihood for millions, and food for hundreds of millions, especially the poor.

Street food sellers produce a huge variety of foods – banana fritters in Bangkok, millet porridge (*monie*) in Senegal, date molasses (*gur*) in Bangladesh, small shish-kebabs (*sate*) in Jakarta, cornmeal (*eko*) in Nigeria, aromatic beans, onions and herbs (*tamia*) in Cairo, raw fish in lemon juice (*ceviche*) in Peru.

Usually, the dishes are based on nutritious, traditional foods, grown by local farmers. In Ziguinchor, Senegal, the 15 most popular street foods are made from locally grown produce. The demand for products sold by street vendors creates a market for farmers and home gardeners.

Women play the major role in street food sales, although in some countries they may be behind the scenes preparing food, rather than selling it.

Despite its vital and important part in feeding



city dwellers, street food activity has often been ignored or treated with hostility by those in authority. Many regarded it as transitory, an informal sector activity that would pass away. It has not, and, with almost half the world's population expected to live in cities within a

decade, it is likely to become more important.

Street foods have become an essential part of urban life, night and day. For many university students in Bogor, Indonesia, for example, street foods make up 80 percent of their diets. Studies in Bangkok, Thailand, suggest that 90

percent of the population eat most of their meals outside the home, mainly as street foods.

Many poor families would be worse off if street food disappeared. For those living in shanty towns, with little or no cooking facilities, street foods provide cooked meals. Poorly paid workers who have to travel long distances on crowded city buses

Life on the street

More than 11 000 people sell street food in Penang, Malaysia. It is the highest income generator on the island after electronic component manufacturing.

From 6 to 11 pm Idris sells *laksa* – a traditional Malaysian dish based on rice noodles with a fish and shrimp sauce – to supplement his household income and help pay for his four children's education.

His wife and his mother-in-law, a *laksa* expert, make it while he works as a houseman at school from 8 am to 5 pm. His teenage son brings water from home and helps on the stall. Idris is licensed, and makes just over US\$5/day from \$18 sales. Some regular customers park their expensive cars beside his cart, but most customers come on foot.

Ramayh supports his wife and three children by selling "economy rice with toppings". Early each morning, he buys fresh food, prepares it with his wife and, at 5 pm, he delivers it with the help of two assistants to his rented site in front of an eating house. He opens his stall from 6 to 10 pm and makes about \$12 on \$86 sales.

rely on street foods for lunch. But they want safe food. This is the main problem with street food.

Bad noodles killed 14 in Perak, Malaysia in 1988; contaminated ice in a sugar-cane drink in Pune City, India was blamed for a cholera epidemic in 1981; and poor street food hygiene is thought to be the main factor in spreading cholera in Peru in the past few years.

The challenge is to improve street food and the way it is produced. This requires action to overcome the basic problems facing street food producers. They need safe water and garbage disposal facilities as well as training in good food handling and preparation practices. Experience in Nigeria, Peru and Colombia shows that sellers willingly accept basic hygiene and sanitation training.

Other related actions, including updating regulations, and food inspection and analysis services to check on street practice, may also be needed.

Street food consumers tend to have low- to medium-level incomes, relatively little education and know little about good hygiene. For them, street foods represent the right food in the right place at the right price. Improving consumers' understanding of nutrition will enable them to make more informed choices and patronize sellers who produce healthier food.

On balance, street foods represent an appropriate, socially useful way of meeting the food needs of city dwellers. The risks they pose can be overcome with government action to ensure that street

food vendors are properly trained, and that they have clean water and garbage disposal facilities. This will ensure that this booming business spreads income and good nutrition without endangering consumers. ■

In brief

■
Street foods are a multi-billion dollar business feeding hundreds of millions of people worldwide. In Malaysia alone, annual street food sales amount to US\$2 200 million.

■
Poor hygiene in food preparation leading to illness in people who eat the food is the major problem with street foods.

■
Many poor city dwellers rely on street foods as their main source of cooked food.

■
Clean water and garbage disposal, education and food control services are essential to ensure the quality and safety of street foods.

Training Nigeria's women traders in food hygiene

In Nigeria, most schoolchildren, workers, traders and many families eat street foods. Sales are increasing as a result of a worsening economic situation. Many families find it cheaper to buy street food than to prepare similar dishes at home.

Women generally prepare and sell street food in Nigeria; in Ibadan 90 percent of sellers are women. These women are mostly illiterate or semi-literate, with no training in food handling and hygiene. Yet the foods they produce are immensely important – for many people's nutrition and for the economy.

Women also dominate in the health education units of the Ministry of Health and in local authorities. Training these women to be trainers for the street food sellers is an essential part of Nigeria's attempts to improve street foods. The first trainer training workshop on the Safe Production and Sale of Street Foods – and the first FAO had supported in Africa – was organized in late 1989 by a Nigerian non-governmental organization, The Food Basket Foundation International.

Keeping food safe to eat

Whether you are rich or poor, in city or country, food should be safe to eat. Mostly it is, but the frequency of food-borne diseases is rising worldwide. In Venezuela, the number of reported cases of food-borne diseases tripled between 1976 and 1987, from about 30 to 90 per 100 000 people. In the United States, there are an estimated 6.5 million cases of food poisoning each year. In developing countries, however, only about 1 percent of cases of food poisoning are reported, compared to 10 percent in the industrialized countries.

The problem of food contamination usually lies in poor handling somewhere along the production chain. By far the most common and most serious source of contamination is biological, notably bacteria, viruses and parasites (see panel). Other sources include common moulds that leave poisons – mycotoxins – on foods. Aflatoxin, which occurs on grains and nuts, including groundnuts, has been linked to the high incidence of liver cancer in some African and Southeast Asian countries.

Industrial pollutants – such as lead and mercury – can contaminate foods. On the farm, the misuse of pesticides and other chemicals can harm farm workers and leave excessive residues in food. Veterinary drugs can also leave unwanted residues in meat or fish.

Sometimes, during processing, inappropriate or dangerous substances may be added to foods to preserve or colour them or to make them appear fresh. Some street food sellers, for example, have used

textile dyes to colour foods.

Scientifically based standards, like those produced by the Codex Alimentarius Commission, provide governments and industry with a guide to what can safely be used. Codex is an intergovernmental body, jointly run by FAO and WHO to establish international quality and safety standards and fair trading practices in food. It has produced over 200 standards and 40 codes of practice and guidelines on good manufacturing practice. These are advisory and it is up to governments to turn them into law.

Unsafe food has economic as well as human costs. Salmonellosis cost the United States an estimated US\$1 000 million in 1987 in medical expenses and lost work time. Mycotoxin contamination causes food losses of about 100 million tonnes per year worldwide.

A reputation for shipping contaminated food can be very bad for business. In 1988, the authorities in the United States detained about \$1 150 million worth of contaminated food imports.

Responsibility for keeping food safe stretches from the farm to the consumer. In part, it depends on

healthy, hygienic living conditions, the provision of safe water and good sanitation facilities.

Education can ensure that people understand how to handle food; greater emphasis on food safety is needed in both formal and informal education activities. Agricultural education and extension services, for example, can improve farmers' knowledge about chemicals and their proper use and storage.

Producers, processors and other people handling food should know that quality and safety guidelines are backed up by a food monitoring and control system. Food control legislation and inspection services help safeguard consumers. This is increasingly important as more people move to cities and eat more processed foods.

When contaminated foods are sold locally, any harmful effects are limited to that area. When foods are distributed countrywide, or even internationally, the number who could be affected by contamination is much greater.

In one instance, a farmer carelessly added an arsenic-based pesticide to meat he prepared for local sale. About 100 people fell ill. In the same country, a large manufacturer of soy

sauce used an ingredient that had been contaminated with arsenic while being shipped in a railcar previously used for industrial chemicals. The contaminated sauce was distributed nationwide.

Fortunately, prompt and effective action by a food control agency saved thousands of people from poisoning.

Many developing countries need help to

Bugs – good and bad

Micro-organisms are an essential part of life. Some help fertilize the soil, others aid digestion, while others help produce food that makes up an important part of people's diets – from cheese and yogurt to bread and wine.

Other micro-organisms turn good food into a health hazard. Some bacteria and parasites can cause vomiting and diarrhoea, other bacteria cause cholera, and viruses cause hepatitis. People in poor health, young children, the aged and pregnant women are most at risk. Sometimes, exposure to the initial illness can lead to long-lasting disorders – of the joints, immune system, heart, liver and kidneys.

In 1985, more than 170 000 people in Chicago were affected by an outbreak of salmonella food poisoning caused by contaminated pasteurized milk. Over 2 percent of those infected later suffered from reactive arthritis.

Good food handling practices, such as keeping fresh and cooked foods separate, help prevent microbial contamination and ensure that only the desirable micro-organisms form part of our diets.

In brief

■ The incidence of food-borne disease is increasing, with biological contamination being by far the most widespread cause.

■ Poor handling somewhere along the food chain is usually the cause of contamination.

■ A well-organized food control system helps protect consumers from unsafe food.

■ Education helps ensure that everyone, from farmer to final consumer, learns how to handle food.



strengthen their food safety systems. In the Seychelles, for example, the government had no food law at all. It asked FAO to help draft food laws and establish a food control agency.

Others need assistance to deal with particular problems. In Zambia, for instance, when the government found pesticide residues in dairy products, FAO consultants helped identify the source and minimize the problem.

Food control procedures have to keep pace with developments in food production, processing and handling – whether they are new farming practices or changing manufacturing processes. No longer is it enough to

look only at the final product. Food control agencies have to understand new techniques, such as

the use of enzymes or biological engineering, in food processing and production, so that they can assess the risks entailed and set appropriate safety checks.

Education, legislation, inspection, laboratory services, and healthier living conditions are all part of the requirements for food safety. ■

Trade to benefit the poor

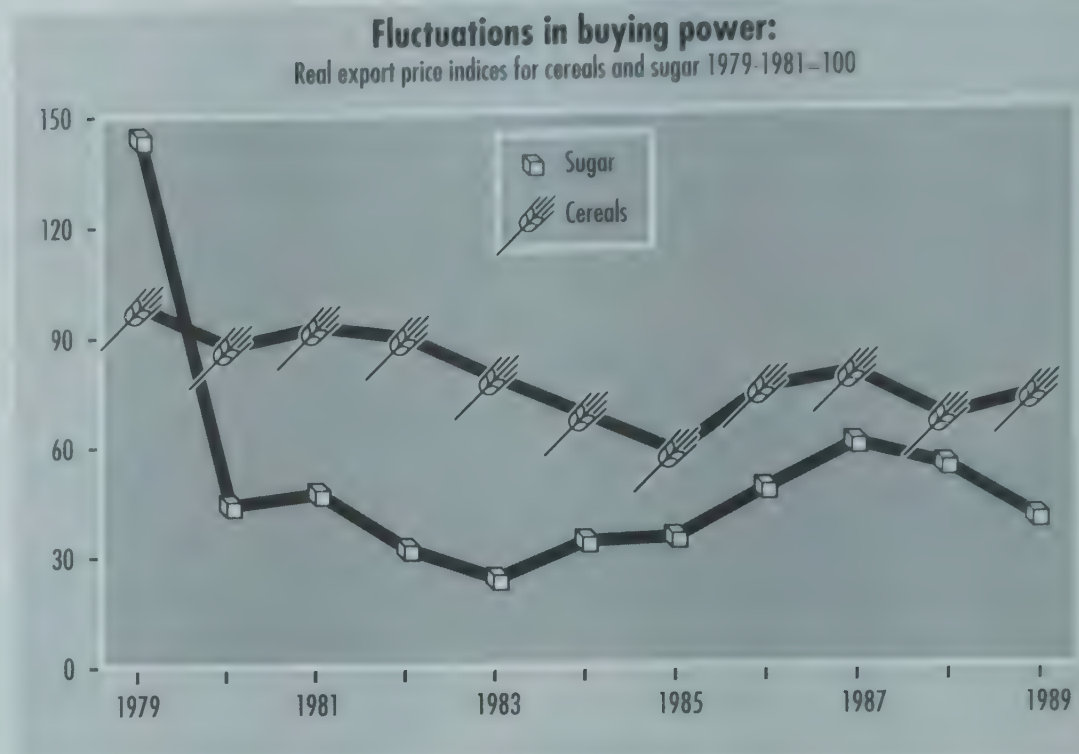
Inequity in world trade adversely affects the ability of poor nations and poor households to meet their basic needs. The relationships are complex but three factors are of special importance: the terms on which trade is conducted; protectionism that restricts market access; and the servicing of debt.

Many developing countries rely on exports of primary commodities – minerals and agricultural products such as coffee, sugar, cotton and fruits – to finance imports. Small farmers and landless labourers often depend on income from such primary products.

In 1990, agriculture, fishery and forestry exports accounted for about 19 percent of exports from Africa and 31 percent from Latin America. As a result of declines in the value of such commodities, the export income that producer countries receive buys less and less. Africa's earnings from agricultural exports bought 29 percent less manufactured goods and crude petroleum in 1990 than in 1979-81; in Latin America, export earnings bought 12 percent less.

This decline in purchasing power is mirrored within countries. Farmers get less for their products in real terms – their income buys fewer goods.

Declining prices are only part of the problem, however. Unstable prices are another. The United Republic of Tanzania, for example, earns about a seventh of its foreign exchange from cotton, but prices fluctuate wildly. Worldwide, export prices for tea, coffee



and cocoa have varied widely since 1979. The range is enormous, with income from a fixed volume of exports buying about 25 percent more goods at the highest point and about 45 percent less at the lowest than it did in 1979. Such price instability makes planning national and household budgets very difficult.

Problems with unstable and

declining commodity prices are compounded by the effects of the debts amassed by many developing countries since the 1970s, when low interest rate loans were widely available. Since then, interest rates have risen rapidly, increasing payments due on the debts.

By the end of 1990, external debts for all developing countries totalled US\$1 319 000

million. Servicing these debts forces countries to maximize exports and use a large proportion of their earnings to meet interest payments – 20 percent or more for some countries.

In 1989 the cost of servicing of medium- and long-term debt in developing countries exceeded export earnings for agriculture, fisheries and forestry by more than \$27 000 million.

Export quality regulations help trade

Thailand is the world's largest rice and cassava (tapioca) exporter and the second largest exporter of large shrimps. It also exports fruit and vegetables, nuts, grains, meat and animal products, fish and processed foods. About 60 percent of the country's foreign exchange comes from food exports.

Thailand previously had problems with below-standard food exports – from mycotoxins in grains, to unacceptable pesticide residue levels. In the early 1980s, with FAO assistance, the government improved its analytical services for food contaminants, additives and mycotoxins. A voluntary Export Inspection and Certification System was established, initially for processed fruit and vegetable exports. A statutory system will be adopted in the future.

Export premises are registered and their operations regulated. Exporters are licensed, end products are inspected and export certificates are issued, as required by the importing country. Approved products are marked 'Thailand – Approved for export'.

Already, several countries, including Japan, Australia and Sweden, have accepted these export certificates for certain products as the only requirement for entry to their country.

This debt burden limits the ability of nations to improve agricultural productivity or make provisions to protect food security.

During the 1980s, partly as a result of these problems and partly because of domestic policies, many developing countries had to restructure their economies to increase productivity and improve their balance of payments. They increased their exports of agricultural commodities but, because prices fell, their earnings were reduced. As a result, internal subsidies and other social programmes were cut, leaving vulnerable groups unprotected. In Ghana, for example, one study suggested that the food security of the poorest households suffered despite an increase in agricultural production.

Poor people are often very efficient at using land and credit to increase their incomes, but they lack access to them. Improving that access, by making credit available to women, for example, can bring major benefits. In Africa, women play a major role in small-scale farming and as entrepreneurs in urban areas.

Increasing the incomes of poor households and providing employment opportunities will not yield positive results unless the goods produced can be sold. Protectionism is the major barrier to international markets. Tariffs and other disincentives, such as differing standards and quotas, discourage the growth of processing industries in developing countries.

These issues lie at the heart of the Uruguay Round of the

General Agreement on Tariffs and Trade. The voices of the poorest, however, are the weakest at the table.

The industrialized nations are the major agricultural traders. According to the Organization for Economic Cooperation and Development (OECD), industrialized countries supported their agriculture with direct and indirect subsidies amounting to almost US\$300 000 million in 1990.

Some OECD countries subsidize their agricultural exports, leaving developing countries unable to compete. They allow the import of raw agricultural commodities with little or no tariff barriers, whereas processed commodities, which would bring greater returns for developing countries, face much higher tariffs.

Attention to these macro-economic issues is vital for the nutritional well-being of the poorest, who usually bear the brunt of the effects of these policies. ■

In brief

■
Declining terms of trade for agricultural commodities reduce the purchasing power of agricultural exports from developing countries.

■
Servicing massive external debts further limits poor countries' ability to meet food security needs.

■
Protectionism prevents access to many developed country markets, especially for processed agricultural commodities.

■
Attention to these macro-economic issues is vital for the nutritional well-being of the poorest, who usually bear the brunt of the effects of these policies.

Honest trading

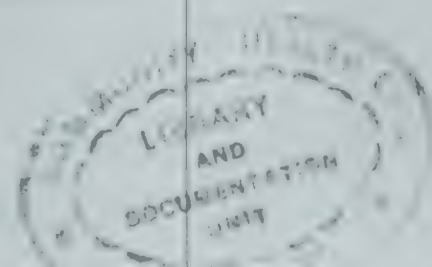
Ethical trade practices protect the public, scrupulous traders and industries. Throughout history, governments have had to set standards and regulate the food supply – to prevent fraud, stop adulteration of food and ensure its safety.

In nineteenth century Europe, mustard hulks, pea flour and juniper berries were added to pepper, ash leaves to green China tea, and poisonous copper and lead salts were used to colour sweets.

Laws to prevent such abuses help food suppliers to compete fairly in the market-place. Today, that market-place has become international and so too has the need to establish standards. The FAO/WHO Codex Alimentarius Commission sets advisory standards and codes of practice to meet the needs of producers, processors, industry, governments and consumers.

For these codes to be effective, however, governments must take responsibility for their enforcement.

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Education and information – tools for better nutrition

Achieving a well-fed world means improving what people eat – the quantity, quality and variety. For the hungry, it means increasing their access to food so that they can eat enough. For others, it means a change from eating habits that lead to deficiency or diet-related diseases.

Knowledge about nutrition is essential – for individuals and for policy-makers. Education and information materials provide that knowledge. The long-standing commitment to education, especially female education, in the poor Indian state of Kerala, for example, has been a major factor in the longer life expectancy there – some 70 years compared to the Indian average of 56-58.

Illiterate or poorly educated people are more likely to be malnourished. A study in China found that illiterate or poorly educated mothers were more likely to have malnourished children than were better-educated mothers.

Food habits and nutritional understanding are formed from birth through family, social, cultural, religious and economic circumstances. In many places, marketing activities by food companies are also a major factor influencing food choices.

Understanding people's lives and options is essential. The messages must relate to people's concerns and

suggest realistic responses. This lesson from advertising and marketing is being applied in nutrition education in Asia.

In West Sumatra, one project team spent three years using radio spots, mini-dramas, market promotions, counselling materials for health workers and guides for community groups to counter the beliefs of mothers that dark-green leafy vegetables were bad for children. As a result, attitudes changed and consumption of vegetables increased. Similar programmes have been successful in the Philippines and in Bangladesh.

Changing eating habits takes sustained effort and repetition, such as the kind of social marketing used with the ivy gourd (see panel). A wide range of methods can be used

according to the requirements of the target groups.

Poverty can prevent people from changing food habits, even when they accept that they should, as the Bangladesh Rural Advancement Committee found in 1987. Efforts to improve the diets of breast-feeding mothers had little effect because families could not afford to buy the necessary foods. The improvement they could afford was to spend extra on small amounts of complementary foods needed for breast-fed babies of six to twelve months.

Quite often, especially for the poor, nutrition education has to be linked to income generation, food production, home gardens and subsidized food or other such programmes that give families a choice of food. Public health measures, such as primary

health care, safe water supplies, and sanitation are also required.

Mass media – radio, television and the press – have generally been greatly underused, even though they can have a major impact. In the Philippines, after a mass media campaign to promote specific, low-cost nutritious foods, about three-quarters of the people surveyed knew about the radio and TV ads and had used the foods.

Advertising is an effective way to get a simple message across. In addition, reporting in the mass media increases

Come and eat ivy gourd

'Come and eat ivy gourd', 'let's grow ivy gourd' and 'healthy and strong' were the main slogans used in a successful nutrition education campaign in Thailand to fight vitamin-A deficiency in women and children.

Research found that several vitamin-A rich foods were reliably available locally; there was limited production of such foods from school gardens; and some food beliefs were mistaken.

Armed with this information, a panel of local leaders, community activists, district health and agriculture officials, university researchers and advertising specialists discussed how to tackle the problem. Their solution – promote a single vegetable, the ivy gourd, which is high in vitamin A, familiar and acceptable. It could easily be grown, gathered and integrated into the usual household diet.

Encouraging home gardening was a major plank of the campaign. The first slogan aimed to create awareness, the second to influence behaviour and the third to reinforce behaviour change. Improved child health was the key benefit stressed, not the prevention of blindness. Mothers did not see blindness as a threat but did see that their children were often ill from diarrhoea, respiratory infections and other illnesses that are associated with vitamin-A deficiency.

Personal and group contact, public address systems, radio, outdoor activities, posters, billboards, print and audiovisual materials all repeated and reinforced the message. Plants were widely distributed, schools and villages held contests in ivy gourd cultivation, Buddhist monks held meetings and gave sermons. In addition, drama groups and folk singers took up the story.

After two years, ivy gourds were part of the local diet and both mothers and children were healthier.



In brief

■
Nutrition education and information helps individuals and policy makers to make the necessary changes to improve nutritional well-being.

■
Successful nutrition education takes account of people's concerns and opportunities to change. Poverty can prevent people from acting on the knowledge they have.

■
The mass media are an under-used tool in nutrition education and can provide informal warnings of impending disasters.

awareness about nutrition, enables the exchange of experience between different communities and helps to influence policy-makers.

The media can have another role, particularly if they can report freely. They pick up the anecdotal early warning signs of trouble – and threats of famine. By alerting people early and publicly, they can help generate pressure on governments to take action. India has been free from major famines, in part, because a free press has been able to alert the public.

Other types of information are also important. For example, statistics can be gathered that show the nutritional status of people and identify trends. Key statistical indicators include low

birthweight babies and underweight children, food price changes and women's school enrolment.

FAO runs a Global Information and

Early Warning System for Food and Agriculture which provides information about potential failures in harvests and food supplies. Information from this and a special locust watch, for example, alerts governments to the need to take control measures. ■

Food – more than nutrients

Effective nutrition education recognizes that food is much more than an agricultural commodity or fuel for the body. It is used to celebrate life as well as to sustain it, to express hospitality, status, aspirations and belief. These other roles influence people's response to attempts to improve nutritional well-being.

Even the poorest people try to fulfil social obligations for which food is vital. Where custom demands it, families can go deep into debt to provide the ceremonial feast and dowry that accompany a daughter's wedding.

Beliefs about food differ widely from society to society. Some foods have low status because they are generally eaten by the poor. In many societies, vegetables and fruits are not considered to be valuable foods. In Southeast Asia foods are regarded as 'hot' or 'cold'. Mothers with new-born babies are not supposed to eat 'cold' foods, which include all fruits and vegetables.

Different societies have developed cuisines based on locally available foods. They usually consist of a basic staple food, like rice, wheat or roots, supplemented with meats, vegetables, fruits and nuts. The human ability to adapt to a wide range of foods is one major factor in our species' survival.

Particular foods and dietary patterns have become associated with particular ways of living – what are now being called 'lifestyles'. As people move from rural to urban areas, or become more affluent, their diet changes – not always for the better. With increased affluence, people may spend their extra money on status foods, rather than those which would improve their diet.

In cities, people may not have enough time or space for producing traditional foods which require many hours of preparation. Instead, more convenient foods – street foods, new staples or more-processed traditional ones – may be used.

The International Conference on Nutrition – time for action

There has been a lot of talk about malnutrition, but not enough action to prevent it. The International Conference on Nutrition (ICN), jointly sponsored by FAO and WHO, will be a springboard for action to end hunger and malnutrition. For the first time the world's governments will meet to develop realistic strategies to promote and safeguard nutritional well-being throughout the world.

Creating a well-fed world will take concerted action by many different groups. Precisely what needs to be done varies greatly, depending upon national and local circumstances. Making people's nutritional well-being the focus of development policies – and a measure of their effectiveness – would be a good starting point.

The whole process behind the ICN is geared to putting nutrition high on national agendas. At the country level, non-governmental organizations, academics, industry and government departments have been

encouraged to come together to re-examine both national and regional nutritional issues. The very act of assembling these groups is increasing awareness about nutritional problems and how to solve them.

Regional meetings have also given countries the opportunity to examine

their concerns together. They have drawn together senior officials from agriculture, health and planning to discuss nutrition. These meetings have already brought benefits by cutting across often rigid departmental boundaries.

This bottom-up approach to the conference is

producing inputs into a Declaration and Global Plan of Action, which the conference is expected to adopt.

The national working groups may also become a forum to carry forward the Global Plan of Action at country level after the conference.

As the conference draws nearer, public debate about and awareness of the need for action to end malnutrition will increase. World Food Day will play an important role in increasing this awareness.

The conference is not an end in itself, however, but a beginning. Its success will be judged by the actions taken and the progress that follows. ■

International Conference on Nutrition 5-11 December 1992 Rome, Italy

fact file:

Organizers

The Food and Agriculture Organization and the World Health Organization of the United Nations.

Participants

Ministers from the world's governments and observers from people's organizations, industry, health and farming bodies.

Aim

To commit the necessary political will and the resources to tackle the problems of hunger, malnutrition and diet-related diseases.

Preparations

- Country papers produced by governments, with input from industry, non-governmental organizations (NGOs), academics, consumer unions and other interested bodies.
- A global assessment of the situation and policies and programmes that have worked, supplemented by theme papers and case-studies.
- Regional preparatory meetings and a Preparatory Committee in August 1992, to prepare for the Conference.

Expected outcomes

- Increased public awareness, greater momentum and mobilization of governments, industry, NGOs and others to put an end to hunger and malnutrition. A Declaration and Global Plan of Action is expected to be adopted.
- Agreed follow-up mechanisms and funding for action.

For more information contact:

FAO/WHO Joint Secretariat for the
International Conference on Nutrition,
Viale delle Terme di Caracalla,
00100 Rome, Italy.

Tel: Rome 57973097 or 57973627

Telex: 625852/3

Fax: Rome 57976661

or

National or regional FAO and WHO offices.

World Food Day

World Food day (WFD) was established by FAO's Member Countries at the Organization's Twentieth General Conference in November 1979. The date chosen – 16 October – is the anniversary of FAO. It has since been observed every year in more than 150 countries.

WFD provides a reminder of FAO's continuing search for a lasting solution to the problem of hunger and poverty in the world. WFD was created with the goal that "food for all" should become a human right for present and future generations.

WFD's objectives are:

- to heighten public awareness of the problem of hunger in the world;
- to focus attention on agriculture and food production and to stimulate national, bilateral, multilateral and non-governmental efforts to this end;
- to promote the transfer of technologies to the Third World;
- to strengthen international and national solidarity in the struggle against hunger, malnutrition and poverty, and to draw attention to achievements in food and agricultural development;
- to encourage the participation of rural people, particularly women and the underprivileged, in decisions and activities that influence their lives;
- to encourage economic and technical cooperation among developing countries.

For further information on World Food Day and what you can do on this occasion, please contact the organizers of World Food Day or the FAO Office in your country or write to the following address:

World Food Day Secretariat
Food and Agriculture Organization of the United Nations
Via delle Terme di Caracalla
00100 Rome Italy
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